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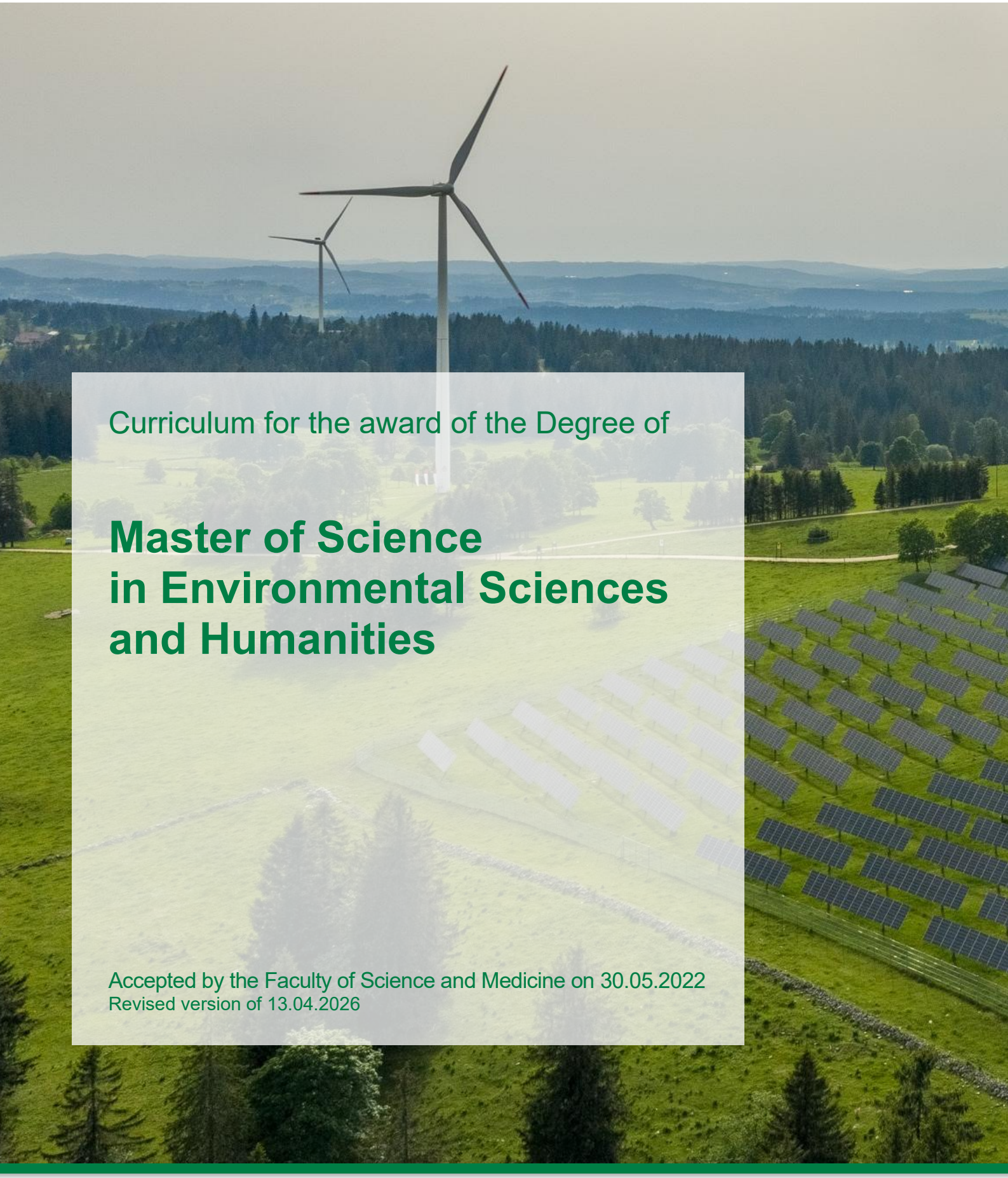

Curriculum for the award of the Degree of

Master of Science in Environmental Sciences and Humanities

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FACULTE DES SCIENCES ET DE MÉDECINE
MATHEMATISCH- NATURWISSENSCHAFTLICHE UND MEDIZINISCHE FAKULTÄT

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1 Introduction

The Master of Science in Environmental Sciences and Humanities educates generalists in environmental sciences with a special competence in environmental humanities and ethics. All modules consist of course units providing a general overview or introduction to the fields of studies and allow for specialization in specific fields of environmental sciences and humanities. The program is based on an interfaculty and a humanistic approach. Within this highly interdisciplinary setting, students achieve key competences in all fields of environmental sciences ranging from biology, geosciences to environmental economics and law while achieving a key focus on the environmental humanities with a special emphasis on ethical decision-making in environmental practice.

All course units of this program make true interdisciplinarity possible as they are followed in their faculties and departments of origin together with students from the respective fields. The program is divided into six modules and the master thesis:

1. The environmental humanities module consists of courses in the fields of the environmental humanities and in ethics. Examples are courses in environmental ethics, methods of ethical decision-making and courses in environmental history and political ecology.
2. The geosciences module deepens knowledge in methods and theory of earth sciences, as well as human and physical geography.
3. The environmental biology module extends knowledge in ecology and biological evolution.
4. The sustainable economy module provides the necessary background in economic thinking in the context of sustainability.
5. The environmental law module focuses on public law at national, European and international levels.
6. The humanities, theology and education module extends humanist background to environmental challenges.

Finally, the master thesis is interdisciplinary, focusing on ethical or humanist aspects of environmental governance and practice.

In conjunction with the courses from the humanities, theology and education module, the environmental humanities module aims at building in-depth competences in humanist approaches to environmental challenges while a special focus lies on ethics and ethical decision-making. The other four modules provide the necessary generalist background to understand the basic scientific, economic and legal aspects of environmental issues to be governed today. Depending on their prerequisites, students follow more advanced or more basic courses. The master thesis allows a specialization on the humanist or ethical aspects of the chosen field of research.

This curriculum introduces the course structure of the MSc study programme in Environmental Sciences and Humanities. It is based on the regulations of the Faculty of Science and Medicine as defined in the ***Règlement pour l'obtention des Bachelor of Science et des Master of Science de la Faculté des sciences et de médecine***, which entered into force on 30 May 2022 (hereafter called Regulation).

The Regulation of 30 May 2022 for the award of the Bachelor of Science and Master of Science degrees establishes a limit on the duration of Bachelor's and Master's studies, as well as of the minor study programmes (see articles 11, 13 and 14) (https://www.unifr.ch/scimed/fr/rules/regulations).

2 General Remarks

2.1 Academic Titles and Programme of Study

The Faculty of Science and Medicine of the University of Fribourg awards the official academic title of **Master of Science in Environmental Sciences and Humanities**, subsequently called **MSc**, to students who have successfully completed this study programme.

The MSc in Environmental Sciences and Humanities provides access to various professional activities in research, environmental consulting and protection, spatial planning, documentation, and administration. Besides, the MSc is the entry requirement for scientific work and deepened scientific education leading to a doctorate.

Candidates in possession of a BSc in Biology, Geography, or Earth Sciences of the University of Fribourg or any other Swiss university including a BSc in Environmental Sciences or related fields from any Swiss university are admitted to the MSc course of studies (Art. 8 of the Regulation). The same holds for candidates in possession of a Bachelor in Anthropology, Economics, Law, Political Sciences, International Affairs, Theology or Philosophy but also any other field in the Humanities accompanied by a minor in Environmental Sciences, Biology, Geography or Earth Sciences of the University of Fribourg or any other Swiss university. Candidates in possession of a Bachelor degree from abroad, in a different subject or without one of the necessary accompanying minors or of equivalent degrees (e.g. after graduating from an engineering school) can also be admitted to the MSc study programme by a decision of the Faculty of Science and Medicine to be made in each individual case. Provisional admission can be granted and depends on the fulfilment of additional requirements set by the Faculty.

2.2 Course Structure

The MSc study programme in Environmental Sciences and Humanities spans over two years (four semesters), corresponding to a minimum of 120 ECTS credits.

It integrates courses in natural and human sciences, in law, economics, the humanities and theology. The course programme consists of the following teaching modules:

- An *Environmental Humanities module* totalling 18 ECTS credits.
- A *Geosciences module* comprising courses from physical Geography and Earth Sciences totalling 18 ECTS credits.
- An *Environmental Biology module* comprising courses from Biology totalling 18 ECTS credits.
- A *Sustainable Economics module* comprising courses from the economics option sustainable development and social responsibility totalling 10,5 ECTS credits.
- An *Environmental Law module* totalling 10 ECTS credits.
- A *Humanities, Theology and Education module* totalling 6 ECTS credits.
- A *Supporting courses module*, comprising elective modules from the modules above to achieve the necessary competences not acquired during Bachelor studies. The selection of the courses must be approved by the director of the programme. It comprises the necessary ECTS credits to reach the minimum total of 120 ECTS credits.
- A *Master thesis module*, comprising the Master thesis and two environmental humanities colloquia to reach a total of 30 ECTS credits.

The course language will be mainly English, with French and German depending on the faculty and occasions. For exams and written work (project reports, MSc thesis, etc.) the language is defined according to the course requirements. Most common language for exams will be English.

2.3 Acquired Skills

The aim of the studies leading to the award of a MSc in Environmental Sciences and Humanities is to deepen knowledge and to perfect competence in the chosen field. At the end of the programme, a student will have shown that they can apply their knowledge to accomplish a research project and will have learned how to work independently or how to integrate into an interdisciplinary research team. The award of the degree requires creative and self-critical thinking as well as the ability to communicate ideas and work both in English.

2.4 Assessment of Courses and Acquisition of ECTS Credits

Acquisition of ECTS credits occurs in three steps: assessment of the courses, grouping of courses into validation packages, and awarding the respective credits.

Exercises are assessed following the criteria given at the beginning of each course. Admission to an exam corresponding to a lecture course can be subject to meet the requirements of the corresponding exercise class. **Assessment** of lectures is done by an oral and/or written exam, whose type and duration are regulated in the appendix to this curriculum. Exams take place during the official exam periods (sessions) in winter, summer, and autumn. Students register via the students' web portal MyUniFR (https://my.unifr.ch), within the stipulated delays for each exam according to the online procedure. Marks range from 6 (highest mark) to 1 (lowest mark). An exam marked below 4 can be repeated once at the next exam session at the earliest.

Validation packages comprise multiple, separately assessed courses. Art. 24 and 27 of the Regulation determines the number of these package whereas this curriculum determines their content. There are three validation packages:

- The *first package* (45 ECTS credits) consists of the compulsory courses of the Environmental Humanities Module, and all the courses of the Geosciences Module and the Environmental Biology Module;
- The *second package* (45 ECTS credits) consists of the elective courses of the Environmental Humanities Module, and all the courses of the Environmental Economy Module, the Environmental Law Module, the Humanities, Theology and Education Module and the Supporting Courses Module;
- The *third package* (30 ECTS credits) consists of the Master Thesis Module.

The conditions for validation of ECTS credits are described in Art. 25 of the Regulation. After the validation, upon request, the Dean's office issues transcripts of records in which exam results and credits awarded are acknowledged (Art. 28 and 30 of the Regulation), provided the exam fee has been paid.

2.5 Ethics and Science

Scientific ethics are an integral part of the curriculum at the Faculty of Science and Medicine and applies to all fields of study.
They are based on fundamental principles such as honesty, rigor, responsibility, and respect for people, data, and the environment.
In all written and oral work completed during their studies, students are required to follow citation and referencing principles, avoid any form of plagiarism or data falsification, and ensure the authenticity of their personal contributions.
The Faculty works to raise students' awareness of the ethical issues specific to scientific practices, in order to promote a responsible approach that aligns with the values of the academic community and society. The use of artificial intelligence (AI) is governed by the departments.

In this context, the Faculty has established two compulsory courses that must be completed during the course of study in order to validate the degree. These courses are listed below:
Detailed descriptions can be found at: https://www.unifr.ch/scimed/en/integrity

1. **Basic orientation and research in the library (part 1)**

The aim is to learn about the specific objectives and methods of documentary research.

This course must be completed during the first semester of study. The results will be viewable only after completion of this course and submission of the signed 'Declaration of Scientific Integrity' form.

2. **Systematic research and document management (part 2)**

The aim is to prepare and carry out documentary research in a systematic and comprehensive manner.

This training must be completed before or during the Bachelor's or Master's degree. It is compulsory in order to validate the Bachelor's or Master's degree.

2.6 Regulations and Additional Information

Detailed information about studying Environmental Sciences and Humanities can be found in the documents referenced on the web page http://www.unifr.ch/scimed/en/plans which can also be obtained from the Office of the University of Fribourg, Environmental Sciences and Humanities Institute, Chemin du Musée 4, CH-1700 Fribourg.

3. Master of Science (MSc)

[Version 2024, validation packages : PV-SSE.0000052, PV-SSE.0000053, PV-SSE.0000054]

3.1 Course Units

Most course units are units not tailored for students from the MSc in Environmental Sciences and Humanities but for students of the specific fields of study. Be prepared to invest some time to acquire additional basic knowledge if needed. If foreign to a field of study, you are required to follow more basic course units (most probably units at bachelor level) before attending more advanced course units (most probably units at master level). More basic course units can be part of the units validated in one of the modules or can also be validated as supporting courses.

Environmental Humanities Module

Code	Course	Semester	tot. h.	ECTS
	Compulsory courses[1]			
	One of the following two courses. Additional courses are accredited as elective courses:			
SSE.00432	Principles of environmental ethics (advanced), including reading seminar[2]	AS	56	6
SSE.00452	Responsibility in green political theory (advanced), including reading seminar[2]	AS	56	6
	The following course:			
SSE.00470	Case studies in environmental sustainability	SS	28	3
	Elective courses			
SSE.00420	Justice in managing environmental challenges[2]	AS / SS	28	3
SSE.00433	Principles of environmental ethics (advanced)[2,3]	AS	28	3
SSE.00450	Responsibilities for sustainability[2]	AS / SS	28	3
SSE.00453	Responsibility in green political theory (advanced)[2,3]	AS	28	3
SSE.00455	Environmental ethics for the Anthropocene[2]	AS / SS	28	3
SGG.00485	Environmental history	SS	28	3
SGG.00487	Issues in environmental ethics[2]	AS / SS	28	3
SGG.00477	Political ecology	SS	28	3
SSE.00410	Narratives for a changing planet[4]	AS / SS	28	3
	Total			**18**

[1] To be followed in the first three semesters. Ideally, SSE.00432 or SSE.00452 is followed before SSE.00470 but this is no strict pre-requisite.
[2] Given every second year.
[3] Can only be followed if a corresponding course including the reading seminar has not been followed (SSE.00433/SSE.00453 and SSE.00432/SSE.00452 cannot be taken and validated together).
[4] On announcement only.

Geosciences Module

Code	Course	Semester	tot. h.	ECTS
	Compulsory Master level courses			
SGG.00424	Hazards, risks and vulnerability	AS	28	3
SGG.00426	Climate change: state of the art and debates	AS	28	3
SGG.00512	Geocolloquium[1]	AS/SS	28	3
	Elective courses			
	Bachelor level[2]			
SGS.01001	Introduction aux géosciences 1 – Espace et Société / Einführung in die Geowissenschaften 1 – Raum und Gesellschaft	AS	28	3
SGS.01002	Introduction aux géosciences 2 – Atmosphère, Hydrosphère et Climat / Einführung in die Geowissenschaften 2 – Atmosphäre, Hydrosphäre und Klima	AS	28	3
SGS.00106	Histoire de la Terre / Erdgeschichte	SS	28	3
SGG.00205	Géographie urbaine / Stadtgeographie	SS	28	3
SGS.01201	Ecologie politique de l'eau	SS	14	1.5
SGS.01301	Géologie et société: défis appliquées	SS	14	1.5
	Master level[3]			
SGG.00489	Advanced social research methods	AS	40	5
SGG.00409	Models, modelling and representations	AS	28	3
SGG.00447	Data and methods for environmental analysis	AS	40	5
SST.00538	Palaeoclimatology and palaeoecology	AS	28	3
	Total			**18**

[1] 25 Geocolloqium sessions can be attended over 4 semesters.
[2] Can only be followed if no studies in geosciences at the Bachelor level.
[3] Please consider potential pre-requisites! Consult the information provided in the course catalog (https://www.unifr.ch/timetable) or in the study portal MyUniFR (https://my.unifr.ch).

Environmental Biology Module

Code	Course	Semester	tot. h.	ECTS
	Compulsory Bachelor level courses			
	For students without any ECTS in Biology during their Bachelor Studies			
SBL.00001	Biologie générale I (cours) / Allgemeine Biologie I	AS	46	5
SBL.00002	Biologie générale II (cours) / Allgemeine Biologie II	SS	46	5
SBL.00003	Biologie générale I (travaux pratiques) / Allgemeine Biologie I (Praktikum)	AS	12	1
SBL.00004	Biologie générale II (travaux pratiques) / Allgemeine Biologie II (Praktikum)	SS	12	1
	Compulsory Master level courses			
	One of the following courses. Additional courses are accredited as elective courses.			
SBL.06002	Classical models in Biology (lecture)[1]	SS	28	3
SBL.20031	Community Ecology[2]	SS	28	3
SBL.20037	Invasion Biology[2]	AS	28	3
SBL.20041	Global Change Biology[2]	AS	28	3
	Elective courses			
	Bachelor level[3]			
SBL.00013	Ecologie / Ökologie	AS	42	4
SBL.00014	Biologie moléculaire / Molekularbiologie	AS	28	3

SBL.00018	Biologie moléculaire des plantes / Molekularbiologie der Pflanzen	AS	28	3
SBL.00021	Biologie de l'évolution / Evolutionsbiologie	AS	28	3
SBL.00040	Organismenbiologie I: Wirbeltiere (Vorlesung und Praktikum/Exkursionen)	AS	28	3
SBL.00041	Organismenbiologie II: Wirbellose Tiere (Vorlesung und Praktikum/Exkursionen)	SS	28	3
SBL.00045	Hormones et développement des plantes / Hormone und Entwicklung der Pflanzen	SS	28	3
SBL.00049	Génétique des populations / Populationsgenetik	AS	28	3
SBL.00061	Diversité fonctionnelle des microorganisms / Funktionale Diversität der Mikroorganismen	AS	14	1.5
SBL.00063	Bases de bactériologie / Grundlagen der Bakteriologie	AS	14	1.5
SBL.00068	Phytopathologie et interactions plantes-pathogènes / Phytopathologie und Pflanzen-Pathogen Interaktionen	AS	18	3
SBL.00074	Organismenbiologie III: Pilze und Pflanzen (Vorlesung und Praktikum / Exkursionen)	SS	72	5
	Master level			
SBL.00323	Plant Biotechnology[2]	SS	28	3
SBL.00421	Oceanography and marine ecosystems[1]	SS	8	1
SBL.06003	Classical models in Biology (practicals)[4]	SS	14	1
SBL.10004	Ethics in stem cell research	SS	8	1
SBL.10007	Polar Biology[2]	SS	8	1
SBL.20034	Evolutionary Genomics	SS	28	3
	Total			**18**

[1] Presupposes good knowledge in analysis as taught in UE-SMA.01103 and UE-SMA.01104.
[2] Given every second year.
[3] Can only be followed if less than 30 ECTS in biology at the Bachelor level.
[4] Can only be followed if SBL.06002 is followed in parallel.

Bachelor level and Master level courses presuppose basic knowledge in biology (as taught in SBL.00001, SBL.00002, SBL.00003 andSBL.00004) and have strict pre-requisites (see below). Students without any ECTS in biology during their Bachelor studies follow the compulsory Bachelor level courses before taking any other courses in biology. Students who have not acquired at least 30 ECTS in Biology or similar during Bachelor studies necessarily follow elective courses at Bachelor level only, before taking MSc level courses. Students having acquired less than 30 ECTS in Biology during their Bachelor studies confer with the study advisor of this MSc to clarify what pre-requisites for Master level courses apply to them. It is recommended that they take additional Bachelor level biology courses in the supporting course module. Pre-requisites are defined as follows:

Course to attend	*Pre-requisite*
SBL.00205	SBL.00013; SBL.00040; SBL.00041; SBL.00074 or similar
SBL.00323	SBL.00014, SBL.00018
SBL.00421	SBL.00013
SBL.10007	SBL.00013
SBL.20031	SBL.00013; SBL.00040; SBL.00041; SBL.00074 or similar
SBL.20034	SBL.00021, SBL.00049
SBL.20036	SBL.00013
SBL.20037	SBL.00013; SBL.00040; SBL.00041; SBL.00074 or similar

Sustainable Economy Module

Code	Course	Semester	tot. h.	ECTS
	Elective courses			
	Bachelor level[1]			
EEP.00336	ECO02F: Économie publique	SS	56	6
EEP.00337	ECO02D: Wirtschafts- und Finanzpolitik	SS	56	6
	Master level			
EGE.00017	Esprit et création d'entreprises & entrepreuneuriat social[2]	AS	42	4,5
EGE.00024	Ethique en affaires et en finance (EAF)[2]	AS	42	4,5
EGE.00073	Markt und Strategie von Nonprofit-Organisationen	SS	42	4,5
EGE.00076	Performance Measurement in Nonprofit Organisations	SS	42	4,5
EGE.00108	Marketing durable	SS	42	4,5
EEP.00063	Evaluation des dommages et politiques environnementales	SS	42	4,5
EEP.00125	Sustainable Globalization	AS	42	4,5
EEP.00127	Business and Human Rights	AS	28	3
EEP.00131	Demography, Immigration and Labor Markets	SS	24	4,5
EEP.00147	Microéconomie du développement[2]	SS	42	4,5
EEP.00153	Politiques de développement[3]	AS	42	4,5
EEP.00321	Aide, microcrédit et autres instruments de développement	AS	42	4,5
EEP.00325	Ethics, Politics and Economics[2]	SS		4,5
EEP.00331	The Ethics of Economics as a Profession	SS	42	4,5
EEP.00334	Global Economic Justice[2]	SS	42	4,5
EEP.00340	ECO05F: Économie publique - Approfondissements	AS	42	4,5
EEP.00351	History of Economic Thought	AS		4,5
EEP.00353	Unternehmens- und Wirtschaftsethik[2]	SS		4,5
EEP.00357	ECO07F: Économie du développement	SS	42	4,5
EEP.00365	Femmes et familles dans le monde en développement[3]	AS/SS	42	4,5
Changes each time	Topics in Philosophy and Economics: sub. title changes each time	AS		4,5
	Total			**9-10,5**

[1] For students with no experience in economics studies it is recommended to follow one of the two suggested BSc level courses (ECO02F or ECO02D).

[2] Given every second year

[3] Offered on announcement only

Environmental Law Module

Code	Course	Semester	tot. h.	ECTS
	Elective courses			
	Master level			
DDR.00456	Introduction to Swiss Law	AS		5
DDR.00791	Raumplanungs- und Baurecht / Droit de l'aménagement du territoire et de la construction	AS		5
DDR.00798	Umweltrecht	AS		5
DDR.02418	Droit de l'environnement[1]	AS		5
DDR.02419	Natur- und Heimatschutzrecht / Protection de la nature et du patrimoine			5
DDR.02452	Economy, Governance, Climate			5
DDR.02438	Europäisches Umweltrecht			5
DDR.02248	Global Justice and the Law			5
DDR.00596	International and European Responsibility Law	SS		5
DDR.02455	International and European Human Rights Law			5
DDR.02453	International and European Refugee Law			5
DDR.02463	International Environmental Law			5
	Total			**10**

[1] Given every second year.

Humanities, Theology and Education Module

Code	Course	Semester	tot. h.	ECTS
	Elective courses			
	Two master courses from a list of courses at the Faculty of Humanities, the Faculty of Theology and Faculty of Education decided by the director of the program.[5]		56	6
	Total			**6**

[5] The list of courses can be found at https://www.unifr.ch/env/en/studies/master-environmental-sciences-and-humanities/ and is being updated at the beginning of each academic year.

Supporting Courses Module

Code	Course	Semester	tot. h.	ECTS
	Courses to be chosen in a way to achieve the necessary competences not acquired during bachelor studies with the consent of the director of the program. Courses already assessed in another programme cannot be chosen again.			
	Total			**9,5-11**

Master Thesis Module

Code	Course	Semester	tot. h.	ECTS
SSE.00462	Environmental Humanities Colloquium I	AS/SS	56	6
SSE.00461	Master thesis		–	24
	Total			**30**

3.2 Examinations of the MSc and Validation

The teaching units of the *Environmental Humanities Module and the Master Thesis Module* are evaluated according to the modes described in the document “Modalités d’évaluation des UE des Environmental Sciences and Humanities”. The assessments of *all other modules* take place according to the information provided by the study plans of the concerned programs.

The **first two validation packages** comprise all the teaching of the Environmental Humanities Module, the Geosciences Module, the Environmental Biology Module, the Environmental Economics Module, the Environmental Law Module, the Humanities and Theology Module and the Supporting Courses Module. The teaching units of the Master thesis module (SSE.00461 and SSE.00462), including the master thesis, constitute the **third validation package**.

The title of **Master of Science in Environmental Sciences and Humanities, University of Fribourg (MSc)** is conferred upon the validation of all three packages. A failed master thesis must be repeated on a different subject.

3.3 Admission Procedure to the Master Programme

Acceptance to the Master programme in Environmental Sciences and Humanities may be granted provided the following two conditions have been met by the applicant:

- Satisfying the University admission requirements as defined in the *Règlement concernant l’admission à l’Université de Fribourg* (https://www.unifr.ch/apps/legal/fr/document/274904),
- Students possessing a Bachelor of Science in Biology, Geography, or Earth Sciences of the University of Fribourg or any other Swiss university including a BSc in Environmental Sciences or related fields from any Swiss university are admitted to the MSc course of studies (Art. 8 of the Regulation). The same holds for candidates in possession of a Bachelor in Anthropology, Economics, Law, Political Sciences, International Affairs, Theology or Philosophy but also any other field in the Humanities accompanied by a minor in Environmental Sciences, Biology, Geography or Earth Sciences of the University of Fribourg or an academic degree judged equivalent by the Faculty of Science and Medicine.

For candidates with degrees that are not judged equivalent by the Faculty of Science and Medicine, the Commission for Students’ Requests will decide on eligibility (*Commission des requêtes des étudiant-e-s*, Dean’s Office, Faculty of Science and Medicine, ch. du Musée 8, CH-1700 Fribourg, Switzerland).

Based on the candidate’s academic qualification, the Commission for Students’ Requests can accept the application on the condition that additional requirements are fulfilled, provided they are of a minor scope and can be completed simultaneously with the Master studies. Otherwise, access is denied, or applicants can be admitted to a “pre-master programme” and can begin the Master programme only after having fulfilled the requirements initially set for the pre-master. Final acceptance to the Master programme for a qualifying student depends on the successful completion of the additional requirements.

Students not holding one of the relevant titles of Bachelor, a Bachelor accompanied by a relevant minor or a title judged equivalent by the Faculty must follow and successfully complete at least a complementary programme in all relevant fields to the Master in order to be awarded the title MSc in Environmental Sciences and Humanities. Relevant courses followed and successfully completed during former Bachelor studies can be admitted if they are judged equivalent. If complementary courses are of minor scope, they can be completed in parallel to the Master programme. Otherwise, applicants are admitted to a “pre-master programme” and can start with the master degree programme only after fulfilling the requirements initially laid down for the pre-master.